

## General

### Title

Perinatal care: proportion of infants with temperature measured within one hour of admission to the NICU.

### Source(s)

Vermont Oxford Network. First temperature measured within one hour of admission to the neonatal intensive care unit (NICU) and first temperature less than 36 degrees C. Burlington (VT): Vermont Oxford Network; 2015. 4 p.

## Measure Domain

### Primary Measure Domain

Clinical Quality Measures: Process

### Secondary Measure Domain

Does not apply to this measure

## Brief Abstract

### Description

This measure is used to assess the proportion of infants with temperature measured within one hour of admission to the neonatal intensive care unit (NICU).

### Rationale

Body temperature drops quickly after birth in premature newborns, due to high surface area to mass ratio and lack of efficient thermoregulation responses. Cold stress in these infants can lead to increased oxygen demand, respiratory compromise, and hypoglycemia. As a result, hypothermia is associated with increased rates of major morbidity and mortality (Bissinger & Annibale, 2010). Extensive research demonstrates an association between temperatures less than 36°C (moderate or severe hypothermia) with adverse outcomes, (Laptook et al., 2007) with lowest rates of adverse outcomes in infants with body temperatures greater than or equal to 36.5°C (Lyu et al., 2015). Manipulation of environmental temperature (including room temperature and humidity, and prewarming surfaces in contact with infants),

polyethylene wraps (less than 28 weeks), exothermic mattresses, and skin-to-skin contact have been shown to significantly reduce hypothermia for infants less than 36 weeks (Bissinger & Annibale, 2010; Bobby et al., 2014; DeMauro et al., 2013; McCall et al., 2008; Russo et al., 2014; World Health Organization, 1997). The World Health Organization (1997) recommends that newborn body temperature be maintained between 36.5-37.5°C, and suggests that mild hypothermia (36-36.4°C) can be treated with skin-to-skin contact in a warm room, while moderate (32-35.9°C) and severe (less than 32°C) hypothermia require further interventions.

Monitoring temperature is an important first step in thermal regulation. All infants admitted to a neonatal intensive care unit (NICU) should have a temperature measured in the first hour of admission. The percentage of infants whose temperature is measured and recorded is a measure of the quality of care. The percentage of infants with core temperature less than 36°C is another important quality measure (see the National Quality Measures Clearinghouse [NQMC] summary [Perinatal care: proportion of infants with temperature less than 36 degrees Celsius among those with temperature measured within one hour of admission to the NICU](#)).

## Evidence for Rationale

Bissinger RL, Annibale DJ. Thermoregulation in very low-birth-weight infants during the golden hour: results and implications. *Adv Neonatal Care*. 2010 Oct;10(5):230-8. [PubMed](#)

Bobby PD, Cabral J, Cianella J, Matias S, Kelley E, Bowman D. Reducing the incidence of hypothermia in preterm neonates: a community hospital experience. *Obstet Gynecol*. 2014;123:139S.

DeMauro SB, Douglas E, Karp K, Schmidt B, Patel J, Kronberger A, Scarboro R, Posencheg M. Improving delivery room management for very preterm infants. *Pediatrics*. 2013 Oct;132(4):e1018-25. [PubMed](#)

Laptook AR, Salhab W, Bhaskar B, Neonatal Research Network. Admission temperature of low birth weight infants: predictors and associated morbidities. *Pediatrics*. 2007 Mar;119(3):e643-9. [PubMed](#)

Lyu Y, Shah PS, Ye XY, Warre R, Piedboeuf B, Deshpandey A, Dunn M, Lee SK, Canadian Neonatal Network. Association between admission temperature and mortality and major morbidity in preterm infants born at fewer than 33 weeks' gestation. *JAMA Pediatr*. 2015 Apr;169(4):e150277. [PubMed](#)

McCall EM, Alderdice FA, Halliday HL, Jenkins JG, Vohra S. Interventions to prevent hypothermia at birth in preterm and/or low birthweight infants. *Cochrane Database Syst Rev*. 2008;(1):CD004210.

Russo A, McCreedy M, Torres L, Theuriere C, Venturini S, Spaight M, Hemway RJ, Handrinis S, Perlmutter D, Huynh T, Grunebaum A, Perlman J. Reducing hypothermia in preterm infants following delivery. *Pediatrics*. 2014 Apr;133(4):e1055-62. [PubMed](#)

Vermont Oxford Network. First temperature measured within one hour of admission to the neonatal intensive care unit (NICU) and first temperature less than 36 degrees C. Burlington (VT): Vermont Oxford Network; 2015. 4 p.

World Health Organization (WHO). Thermal protection of the newborn: a practical guide. Geneva: World Health Organization (WHO); 1997.

## Primary Health Components

Perinatal care; body temperature measurement; neonatal intensive care unit (NICU); infants

## Denominator Description

All eligible infants admitted to a neonatal intensive care unit (NICU) in the hospital for whom it is known whether the body temperature was measured within one hour of admission to the NICU (see the related "Denominator Inclusions/Exclusions" field)

## Numerator Description

Total number of eligible infants whose body temperature was measured within one hour of neonatal intensive care unit (NICU) admission (see the related "Numerator Inclusions/Exclusions" field)

## Evidence Supporting the Measure

### Type of Evidence Supporting the Criterion of Quality for the Measure

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

### Additional Information Supporting Need for the Measure

Unspecified

### Extent of Measure Testing

Unspecified

## State of Use of the Measure

### State of Use

Current routine use

### Current Use

not defined yet

## Application of the Measure in its Current Use

### Measurement Setting

Hospital Inpatient

Intensive Care Units

## Professionals Involved in Delivery of Health Services

not defined yet

## Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

## Statement of Acceptable Minimum Sample Size

Unspecified

## Target Population Age

Less than or equal to 28 days after birth

## Target Population Gender

Either male or female

## National Strategy for Quality Improvement in Health Care

### National Quality Strategy Aim

Better Care

### National Quality Strategy Priority

Health and Well-being of Communities

Prevention and Treatment of Leading Causes of Mortality

## Institute of Medicine (IOM) National Health Care Quality Report Categories

### IOM Care Need

Staying Healthy

### IOM Domain

Effectiveness

Timeliness

# Data Collection for the Measure

## Case Finding Period

Calendar year (January 1 through December 31)

## Denominator Sampling Frame

Patients associated with provider

## Denominator (Index) Event or Characteristic

Institutionalization

Patient/Individual (Consumer) Characteristic

## Denominator Time Window

not defined yet

## Denominator Inclusions/Exclusions

### Inclusions

All eligible infants admitted to a neonatal intensive care unit (NICU) in the hospital for whom it is known whether the body temperature was measured within one hour of admission to the NICU

*Population:* Any infant who is admitted to a NICU within 28 days of birth should be included.

Note: Refer to the original measure documentation for calculation instructions and data item definitions. For administrative coding and additional data item information, refer to the *2016 Manual of Operations: Part 2 Data Definitions & Infant Data Forms* (see the "Companion Documents" field).

### Exclusions

- Infants admitted more than 28 days after birth
- Infants who have been home prior to admission
- Infants not admitted to the NICU

## Exclusions/Exceptions

not defined yet

## Numerator Inclusions/Exclusions

### Inclusions

Total number of eligible infants whose body temperature was measured within one hour of neonatal intensive care unit (NICU) admission

Note: Refer to the original measure documentation for additional information.

### Exclusions

Unspecified

## Numerator Search Strategy

Institutionalization

## Data Source

Administrative clinical data

Electronic health/medical record

Paper medical record

## Type of Health State

Does not apply to this measure

## Instruments Used and/or Associated with the Measure

Unspecified

## Computation of the Measure

### Measure Specifies Disaggregation

Does not apply to this measure

## Scoring

Rate/Proportion

## Interpretation of Score

Desired value is a higher score

## Allowance for Patient or Population Factors

not defined yet

## Description of Allowance for Patient or Population Factors

Gestational age, birth weight, inborn/outborn status

## Standard of Comparison

not defined yet

## Identifying Information

## Original Title

First temperature measured within one hour of admission to the neonatal intensive care unit (NICU).

## Measure Collection Name

Perinatal Care Measures

## Submitter

Vermont Oxford Network - Health Care Quality Collaboration

## Developer

Vermont Oxford Network - Health Care Quality Collaboration

## Funding Source(s)

None

## Composition of the Group that Developed the Measure

Neonatologists

## Financial Disclosures/Other Potential Conflicts of Interest

None

## Adaptation

This measure was not adapted from another source.

## Date of Most Current Version in NQMC

2015 Jan

## Measure Maintenance

Unspecified

## Date of Next Anticipated Revision

Unspecified

## Measure Status

This is the current release of the measure.

## Measure Availability

Source not available electronically.

For more information, contact the Vermont Oxford Network, 33 Kilburn Street, Burlington, Vermont, 05401; Phone: 802-865-4814; Fax: 802-865-9613; Email: [mail@vtoxford.org](mailto:mail@vtoxford.org); Web site: <https://public.vtoxford.org/> .

## Companion Documents

The following is available:

Vermont Oxford Network. 2016 manual of operations: part 2 data definitions & infant data forms. Release 20.0. Burlington (VT): Vermont Oxford Network; 2015 Oct. 93 p. This document is available from the [Vermont Oxford Network Web site](#) .

## NQMC Status

This NQMC summary was completed by ECRI Institute on February 2, 2016. The information was verified by the measure developer on March 16, 2016.

## Copyright Statement

No copyright restrictions apply.

## Production

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